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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|---|---|---|---|
| 10/540,454 | 05/24/2006 | Hiroshi Abe | ABE | 1418 |

23643 7590 07/18/2008

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| EXAMINER | |
|---|---|
| NATALINI, JEFF WILLIAM | |
| ART UNIT | PAPER NUMBER |
| 2831 | |
| MAIL DATE | DELIVERY MODE |
| 07/18/2008 | PAPER |

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/540,454 | ABE, HIROSHI | |
| | Examiner | Art Unit | |
| | JEFF NATALINI | 2831 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *02 May 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *3-20,22 and 23* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *3-20,22 and 23* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *22 June 2007* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

## DETAILED ACTION

### *Claim Objections*

1. Claim 7 is objected to because of the following informalities: There is no antecedent basis for "the divided electrodes" in these two claims, it seems this should state the "detection electrodes" and will be examined as such. Appropriate correction is required.

### *Claim Rejections - 35 USC § 102*

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 3-6, 10-12, 17-19, and 22 are rejected under 35 U.S.C. 102(b) as being anticipated by Matsushita (JP7-60185, disclosed in IDS).

In regard to claim 22, Matsushita discloses a capacitance detecting proximity sensor that electrostatically detects when a detection subject has come into proximity within a difference threshold (paragraph 4, of the translation disclosed),

wherein the sensor structure houses a first detection electrode and a second detection electrode are mutually electrically independent (figure 2, electrodes are elements 1 and 3), both detecting surfaces of the first detection electrode and the second detection electrode being disposed opposing the detection subject that is approaching (see figure 2, subject x approaches both electrodes that are facing (opposing) the subject, the side facing up on both electrodes is the one that is

considered the detection surface as the object is getting closer to that surface and thus causing the difference in electrostatic capacity that is detected –paragraph 5).

the environment in which the first detection electrode and the second detection electrode are disposed in the sensor structure is differentiated and configured so that when the detection subject is present in the vicinity of the difference threshold, the electrostatic environmental condition between the detection subject and the first detection electrode and the electrostatic environmental condition between the same detection subject and the second detection electrode are different (paragraph 5),

and the sensor circuit detects and outputs the difference between a capacitance to ground formed by the first detection electrode and a capacitance to ground formed by the second detection electrode (paragraph 5 and paragraph 16 with figure 1).

In regard to claim 3, Matsushita discloses wherein the environment in which the first detection electrode and the second detection electrode are disposed in the sensor structure is differentiated so that the spatial distance between the detection subject in the vicinity of the difference threshold and the first detection electrode and the spatial distance between the same detection subject and the second detection electrode are different (figure 2, the distance between subject X and electrode (element 1) is different then the distance between subject X and electrode (element 3)).

In regard to claim 4, Matsushita discloses wherein the dielectric constants of a first dielectric disposed at the front side of the first detection electrode facing the detection subject and a second dielectric disposed at the front side of the second detection electrode facing the detection subject are made different, whereby the

environment in which the first detection electrode and the second detection electrode are disposed in the sensor structure is differentiated (paragraph 17, second and third sentences).

In regard to claim 5, Matsushita discloses wherein the second detection electrode is disposed opposite from the front side of the first detection electrode facing the detection subject so that the second detection electrode is hidden from the difference threshold vicinity at a rear portion of the first detection electrode (figure 2, first detection electrode (element 1) is at a front side compared to the second electrode for detection (element 3)), whereby the environment in which the first detection electrode and the second detection electrode are disposed in the sensor structure is differentiated (paragraph 17, second and third sentences).

In regard to claims 6 and 17-19, Matsushita discloses wherein the first detection electrode, the second detection electrode and the sensor structure are configured in band-like shapes (see figures 5a and figure 2).

In regard to claim 10, Matsushita discloses wherein the first detection electrode and the second detection electrode are divided (see figures 1 and 2), with the shield electrode individually surrounding the divided electrodes (paragraph 6 and figure 5a and b).

In regard to claim 11, Matsushita discloses wherein the sensor circuit includes a first capacitance detection circuit that measures the capacitance to ground of the first detection electrode, a second capacitance detection circuit that measures the capacitance to ground of the second detection electrode, and a difference detection

circuit that outputs the difference between the measured outputs of these two capacitance detection circuits (paragraph 16 and figure 1).

In regard to claim 12, Matsushita discloses wherein the first and second capacitance detection circuits are switched capacitor-type capacitance detection circuits (paragraph 16, "electrostatic capacity").

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 7, 13-16, and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Matsushita (JP7-60185) in view of Kato et al. (6456198).

In regard to claims 7 and 23, Matsushita discloses all that is disclosed above in claim 22, and wherein a shield electrode is disposed in the sensor structure so as to surround another portion of the difference threshold vicinity excluding a front side portion of the difference threshold vicinity facing the detection subject, and the first detection electrode and the second detection electrode are electrostatically shielded by the shield electrode excluding the front direction (paragraph 6 and also figure 5b; see also figure 2, to see wherein in relation the detection electrode 1 is in relation to reference electrode 3; so that the shield shown in figure 5b would also provide at least some shielding to reference electrode from the side direction).

Matsushita lacks specifically

(claims 7 and 23) wherein the shield electrode is formed in a rail shape having a substantially u-shaped cross section so that the first and second detection electrodes are located inside the U-shaped groove, so that both electrodes are individually surrounded.

Kato et al. discloses a detection sensor of an object coming within range (abstract) comprising a shield electrode in a rail shape having a substantially u-shaped cross section (figure 5 element 32- is an aluminum pipe that acts as a shield) so that the first and second detection electrodes are located inside the U-shaped groove (pipe 32 shields detection electrodes 41 and 101 as it is located all around them with a small opening wherein the detection object is able to be detected; see col 9 lines 17-47).

It would have been obvious to one with ordinary skill in the art at the time the invention was made for Matsushita to include a shield electrode that was shielding both electrodes by including a u-shaped shield wherein the two electrodes were located inside the u-shaped groove as taught by Kato et al. in order to be able to detect the approaching of an object coming from a specific direction (in a seat sensor to detect when someone sits in the seat and not something moving below the seat, and in a fence when someone is approaching the outside of the fence and not your pet that is in the inside of the fence).

In regard to claim 13, Matsushita discloses wherein the environment in which the first detection electrode and the second detection electrode are disposed in the sensor structure is differentiated so that the spatial distance between the detection subject in

the vicinity of the difference threshold and the first detection electrode and the spatial distance between the same detection subject and the second detection electrode are different (figure 2, the distance between subject X and electrode (element 1) is different then the distance between subject X and electrode (element 3)).

In regard to claim 14, Matsushita discloses wherein the dielectric constants of a first dielectric disposed at the front side of the first detection electrode facing the detection subject and a second dielectric disposed at the front side of the second detection electrode facing the detection subject are made different, whereby the environment in which the first detection electrode and the second detection electrode are disposed in the sensor structure is differentiated (paragraph 17, second and third sentences).

In regard to claim 15, Matsushita discloses wherein the second detection electrode is disposed opposite from the front side of the first detection electrode facing the detection subject so that the second detection electrode is hidden from the difference threshold vicinity at a rear portion of the first detection electrode (figure 2, first detection electrode (element 1) is at a front side compared to the second electrode for detection (element 3)), whereby the environment in which the first detection electrode and the second detection electrode are disposed in the sensor structure is differentiated (paragraph 17, second and third sentences).

In regard to claim 16, Matsushita discloses wherein the first detection electrode, the second detection electrode and the sensor structure are configured in band-like shapes (see figures 5a and figure 2).

6. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Matsushita (JP7-60185) and Kato et al. (6456198), as applied to claim 7 above, and further in view of Melnick (3311696).

Matsushita as modified discloses a U-shaped shield electrode (see rejection of claim 7 above).

Matsushita lacks specifically wherein metal foil is disclosed on the outer side of the electrode.

Melnick discloses metal foil disposed on an electrode surface (col 5 line 16-23).

It would have been obvious to one with ordinary skill in the art at the time the invention was made for Matsushita to include metal foil on the outside of the u-shaped electrode as taught by Melnick in order to provide shielding to the u-shaped electrode (col 5 line 16-18).

7. Claims 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Matsushita (JP7-60185) in view of Schoefthaler et al. (6215318).

Matsushita lacks wherein the first and second electrodes are formed in a comb shape having teeth and disposed wherein the comb like teeth mesh together.

Schoefthaler et al. discloses a sensor having electrode combs (col 2 line 50-54) wherein the comb like teeth mesh together (seen in figures 1 and 2).

It would have been obvious to one with ordinary skill in the art at the time the invention was made for Matsushita to include comb like filters wherein the teeth meshed

together as taught by Schoefthaler et al. in order to produce a motion dependent change in capacitance (col 2 line 52-54).

8. Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Matsushita (JP7-60185) and Kato et al. (6456198), as applied to claim 7 above, and further in view of Schoefthaler et al. (6215318).

Matsushita as modified lacks wherein the first and second electrodes are formed in a comb shape having teeth and disposed wherein the comb like teeth mesh together.

Schoefthaler et al. discloses a sensor having electrode combs (col 2 line 50-54) wherein the comb like teeth mesh together (seen in figures 1 and 2).

It would have been obvious to one with ordinary skill in the art at the time the invention was made for Matsushita as modified to include comb like filters wherein the teeth meshed together as taught by Schoefthaler et al. in order to produce a motion dependent change in capacitance (col 2 line 52-54).

***Response to Arguments***

9. Applicant's arguments corresponding to claim 22, filed 5/2/08 have been fully considered but they are not persuasive. Applicant has argued that the detecting surface of electrode 4 is not disposed opposing the detection subject that is approaching. The examiner traverses this view as it is clearly seen in figure 2 that the side facing up on both electrodes is the one that is considered the detection surface (the side being connected to detector 2 facing below the seat is not the detection side) as the object is

getting closer to that surface and thus causing the difference in electrostatic capacity that is detected –paragraph 5. It seems in the arguments by pointing to the specification page 12, line 22 to page 13 line 24 that the effect that is being explained is caused by a difference in structure that is based on distances ra and rb, and the capacitances formed (Ca and Cb), but this is not in the claim language and, therefore, can not be considered for determining allowability.

Applicant's arguments with respect to claim 23 have been considered but are moot in view of the new ground(s) of rejection.

***Conclusion***

10. Art made of record and not relied upon is considered pertinent to applicant's disclosure. Shoji et al. (US Publication 2004/0145378) discloses a u-shaped shielding electrode (figure 2a element 5) having two detection electrodes in the u-shaped groove (figure 2a elements 6a and 6b). Nakano et al. (7116117) discloses a u-shaped shielding electrode (figure 9 element 14) having two detection electrodes in the u-shaped groove (elements 12 and 13). These are not considered prior art, but they are pertinent to applicants invention.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JEFF NATALINI whose telephone number is (571)272-2266. The examiner can normally be reached on M-F 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Diego Gutierrez can be reached on 571-272-2245. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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